10.7.1.5 PILE DESIGN REQUIREMENTS

The ultimate load capacity for driven steel H-pile or Pipe-pile shall not exceed:

1) The geotechnical capacity determined by an analysis of the foundation soils as recommended in the Foundation Investigation Report.

2) The structural capacity of the pile as determined by the Nominal Compressive Resistance per Article 6.9.4.1 of the AASHTO LRFD Design Specifications based on the pile acting as a column with the appropriate unsupported length.

3) 75% of the yield strength of the specified pile steel multiplied by the cross-sectional area of the pile.

Commentary

For the purpose of determining the structural capacity of the pile per Article 6.9.4.1the appropriate unsupported pile length for exposed pile bents should be based on the initial unsupported length plus the anticipated scour depth. For pile caps that are initially buried the appropriate unsupported pile length should be based on the anticipated scour depth below the bottom of the pile cap or seal concrete.

A limit of 75% of the yield strength of the pile is imposed to avoid potential pile damage during driving. For economy 36 ksi steel should be specified in most cases because the large ultimate loads that are possible with 50 ksi steel are very difficult to achieve and verify with standard pile driving equipment.

Revisions:
April 2008 Added new article.